

## IN THE CLAIMS

Kindly amend the claims to read as follows:

1. (original) A semiconductor device, comprising: a semiconductor host material, having a valence-band energy,  $E_v$ , a conduction-band energy,  $E_c$ , and an energy gap,  $E_g$ ; a deep-level region, formed in said host material, the deep-level region having one or more deep-level state(s) with energy at least  $0.05 E_g$  above  $E_v$  and at least  $0.05 E_g$  below  $E_c$ ; and, means for injecting carriers into the deep-level region to produce transition(s) between one or more of the deep-level state(s) and the conduction- or valence-band or another deep-level of the host material.

2. (original) A semiconductor device, as defined in claim 1, wherein the deep-level region comprises an optically-active region in which transitions between deep-level state(s) and the conduction- or valence-band or another deep-level of the host material produce or absorb photons.

3. (original) A semiconductor device, as defined in claim 1, wherein the means for injecting carriers into the deep-level region directly injects carriers into one or more of the deep-level state(s) without having to first enter the deep-level region's conduction or valence band.

4. (original) A semiconductor device, as defined in claim 1, wherein the host material is an elemental semiconductor.

5. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises a direct bandgap elemental semiconductor material.

6. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises an indirect bandgap elemental semiconductor material.

7. (original) A semiconductor device, as defined in claim 1, wherein the host material is a compound semiconductor.

8. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises a direct bandgap compound semiconductor material.

9. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises an indirect bandgap compound semiconductor material.

10. (original) A semiconductor device, as defined in claim 1, wherein the host material is an elemental semiconductor from Group IVA of the periodic table.

11. (original) A semiconductor device, as defined in claim 1, wherein the host material is one of: C, Si, Ge, Sn, or Pb.

12. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises a direct bandgap alkali-halide compound.

13. (original) A semiconductor device, as defined in claim 1, wherein the host material

comprises an indirect bandgap alkali-halide compound.

14. (original) A semiconductor device, as defined in claim 1, wherein the host material is an alkali-halide compound.

15. (original) A semiconductor device, as defined in claim 1, wherein the host material is one of: LiF, LiCl, LiBr, LiI, LiAt, NaF, NaCl, NaBr, NaI, NaAt, KF, KCl, KBr, KI, or KAt.

16. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises a direct bandgap binary semiconductor compound.

17. (original) A semiconductor device, as defined in claim 1, wherein the host material comprises an indirect bandgap binary semiconductor compound.

18. (original) A semiconductor device, as defined in claim 1, wherein the host material is a

binary compound formed from Groups IIB and VIA of the periodic table.

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- 127. (withdrawn) A method for making an optically-active semiconductor device, comprising: providing a semiconductor host material, having a valence-band energy,  $E_v$ , a conduction-band energy,  $E_c$ , and an energy gap,  $E_g=E_c-E_v$ ; processing a region of said host material to create an optically-active region wherein a conduction-band-to-deep-level or deep-level-to-valence-band or deep-level-to-deep-level transition produces light of a desired wavelength; and, abutting the optically-active

region with a material selected to enhance carrier transport that supports the desired light-producing transition.

128. (withdrawn) A method for making a deep-level-semiconductor-device, comprising: providing a semiconductor host material, having a valence-band energy,  $E_v$ , a conduction-band energy,  $E_c$ , and an energy gap,  $E_g = E_c - E_v$ ; processing to create a deep-level region containing deep-level energy state(s) useful for electrical or optoelectronic or optical devices; and, abutting the deep-level region with a material selected to enhance carrier transport that supports desired transition(s) involving one or more of the deep-level state(s).

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230. (new) A semiconductor device, as defined in claim 1, wherein the host material is one of:  
ZnO, ZnS, ZnSe, ZnTe, ZnPo, CdO, CdS, CdSe, CdTe, CdPo, HgO, HgS, HgSe, HgTe, or HgPo.



231. (new) A semiconductor device, as defined in claim 1, wherein the host material is a binary compound formed from Groups IIIA and VA of the periodic table.